SURFboard® Cable Modem SB3500

User Guide

MOTOROLA

REGULATORY INFORMATION

Federal Communications Commission Radio and Television Interface Statement for a Class 'B' Device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in the residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Increase the separation between the equipment and the effected receiver
- Connect the equipment on a circuit different from the one the receiver is on

You may find the following booklet, prepared by the Federal Communication Commission, helpful:

How to Identify and Resolve Radio-TV Interference Problems
Stock No. 004-000-0342-4,
U.S. Government Printing Office
Washington, DC 20402

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

WARNING

This product was FCC certified under test conditions that included the use of the supplied cable between system components. To be in compliance with FCC regulation, the user must use this cable and install it properly.

WARNING

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use.

Declaration of Conformity

According to 47CFR, Parts 2 and 15 for Class B Personal Computers and Peripherals; and/or CPU Boards and Power Supplies used with Class B Personal Computers, Motorola BCS, 6450 Sequence Drive, San Diego, CA 92121, 1-800-225-9446, declares under sole responsibility that the product identifies with 47CFR Part 2 and 15 of the FCC Rules as a Class B digital device. Each product marketed is identical to the representative unit tested and founded to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR 2.909. Operation is subject to the following condition: This device must accept any interference received, including interference that may cause undesired operation. The above named party is responsible for ensuring that the equipment complies with the standards of 47CFR, Paragraph 15.101 to 15.109. The Class B digital apparatus meets all requirements of the Canadian Interface Causing Equipment Regulations.

WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

TO PREVENT ELECTRICAL SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE, OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

CAUTION

THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

Canadian Compliance

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respects toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Repairs

If repair is necessary, contact your cable modem service provider.

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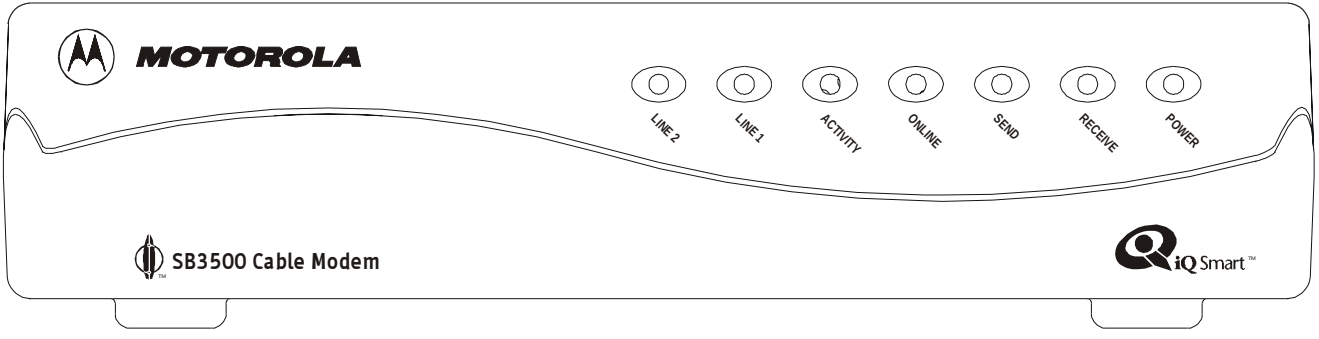
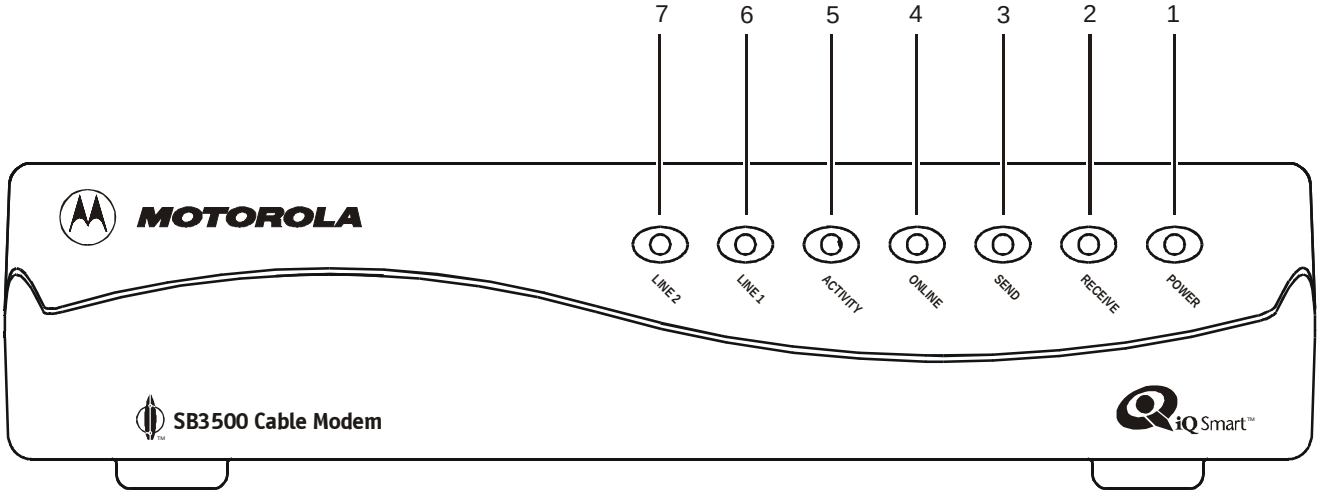
INTRODUCTION

The Motorola SURFboard® SB3500 cable modem enables you to connect your home or business computer to a high-speed Data Over Cable Service Interface Specification (DOCSIS) 1.0 or 1.1 compliant data network. The SB3500 provides high-speed, bi-directional data access with Radio Frequency (RF) downstream transfer rates up to 38 Mbps and RF upstream rates up to 10 Mbps. It also provides telephony voice communication features using the Internet Protocol (IP) known as Voice over IP (VoIP).

Unlike a dial-up modem, the SB3500 is always online. Just open your browser and surf.



Front Panel


7
6
5
4
3
2
1
MOTOROLA
LINE 2
LINE 1
ACTIVITY
ONLINE
SEND
RECEIVE
POWER
SB3500 Cable Modem
iQ Smart™

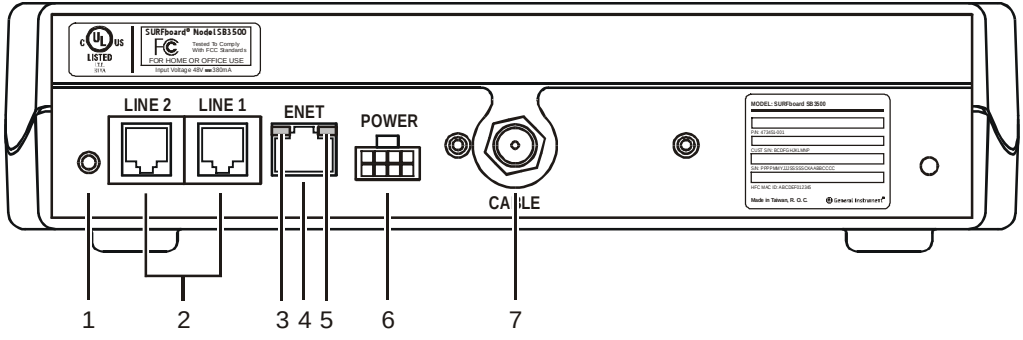
Front Panel

The seven front-panel lights provide information about power, communications, and errors.

	Light	Color	Description
1	Power	Green	When the light is flashing, startup diagnostics are being performed. A solid light indicates the SB3500 is on.
2	Receive	Green	When the light is flashing, the SB3500 is scanning for the downstream frequency. A solid light indicates the downstream channel is acquired.
3	Send	Green	When the light is flashing, the SB3500 is scanning for the upstream frequency. A solid light indicates the upstream channel is acquired.
4	Online	Green	When the light is flashing, the SB3500 is scanning for the network connection. A solid light indicates the network connection is acquired.
5	Activity	Amber	When the light is flashing, the SB3500 is transmitting or receiving data. When the light is off, the SB3500 is not transferring data.
6	Line 1	Amber	A solid amber light indicates that telephone line 1 is active.
7	Line 2	Amber	A solid amber light indicates that telephone line 2 is active.

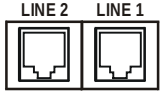
If an error occurs, the lights provide a quick way of detecting the problem. See Troubleshooting for more information.

Rear Panel



Rear Panel

The rear panel provides Ethernet activity and link status lights, the reset button, and all the connectors.

	Item	Description
1		This is the recessed reset button.
2		These ports transfer data to and from analog phone lines. They are RJ-11 connectors.
3		When this yellow light flashes, the Ethernet connection is transferring data.
4		This port transfers data to and from your computer. This is an RJ-45 connector.
5		When this green light is on, the Ethernet connection is available.
6		This connector provides power to the SB3500.
7		This port provides RF connectivity to and from your service provider. This is an F-type connector.

BEFORE YOU BEGIN

Before you begin the installation, check that you received:

One 10Base-T Ethernet cable	Required to connect your computer to the SB3500.
Power supply and cable	The SB3500 supports two power supply options:
	Uninterruptable Power Supply (UPS)
	or
	Brick-style Power Supply

You need to purchase a 75-ohm coaxial cable with F-type connectors for connecting to the nearest cable outlet. If you have a TV set attached to the cable outlet, you may need a 5-900 MHz splitter to use both the TV and the SB3500.

BEFORE YOU BEGIN

NOTE

The Ethernet card must be installed before the SB3500. If it isn't, follow the installation instructions that came with your Ethernet card.

To use all the features of the SB3500, you will need the following:

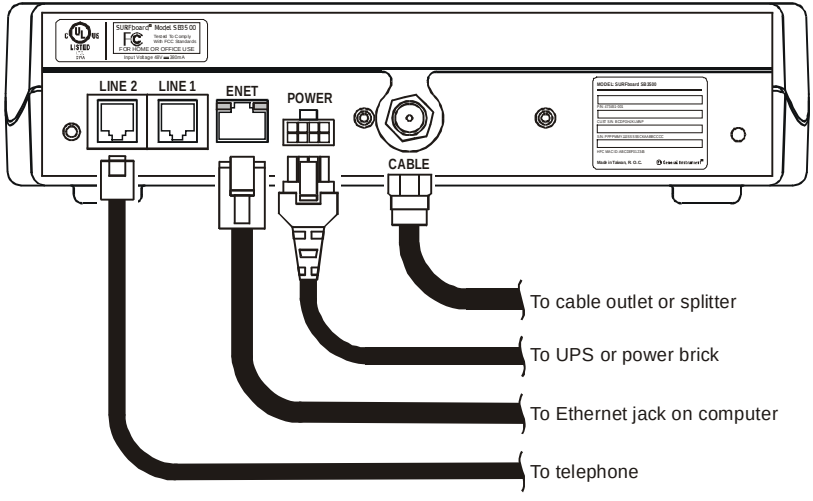
Telephone(s) with standard RJ-11 connectors	Required to use the telephony features of the SB3500.
Service Provider	You must sign up with a data service provider who provides access to the Internet and other online services.
Computer	Your computer must support Ethernet and the TCP/IP protocol to access the SB3500. The SB3500 is compatible with Microsoft®, Macintosh®, and UNIX® operating systems. You don't need special software to operate the SB3500.
Ethernet card	Any standard 10Base-T Ethernet card operates with the SB3500. Your computer must be configured for TCP/IP and have an IP address for the SB3500 to operate. Your Internet service provider furnishes the IP address.
HTML Browser	Any standard HTML (web) browser works with the SB3500.

The installation of the SB3500 can be completed in a matter of minutes. After you attach the cables, you must configure your computer.

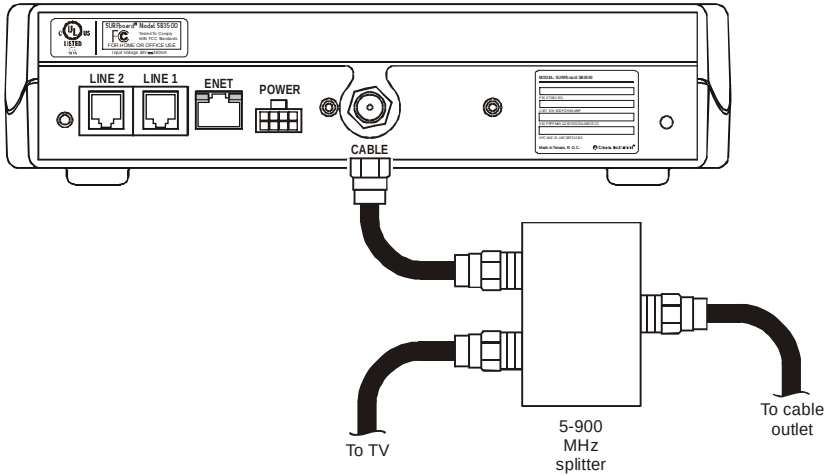
The SB3500 installation steps must be performed in the order shown in the following pages.

For a Single User

1 Connect the coaxial cable to a cable outlet in your home. Connect the other end to the SB3500 connector marked CABLE, as shown below. *Hand-tighten the connectors to avoid damaging them.*



If you already have a TV connected to the cable outlet, you will need to use a 5-900 MHz splitter. Connect the coaxial cable as shown below:



2 Connect the 10Base-T Ethernet cable to the SB3500 connector marked ENET and the other end to the Ethernet jack on the back of your computer.

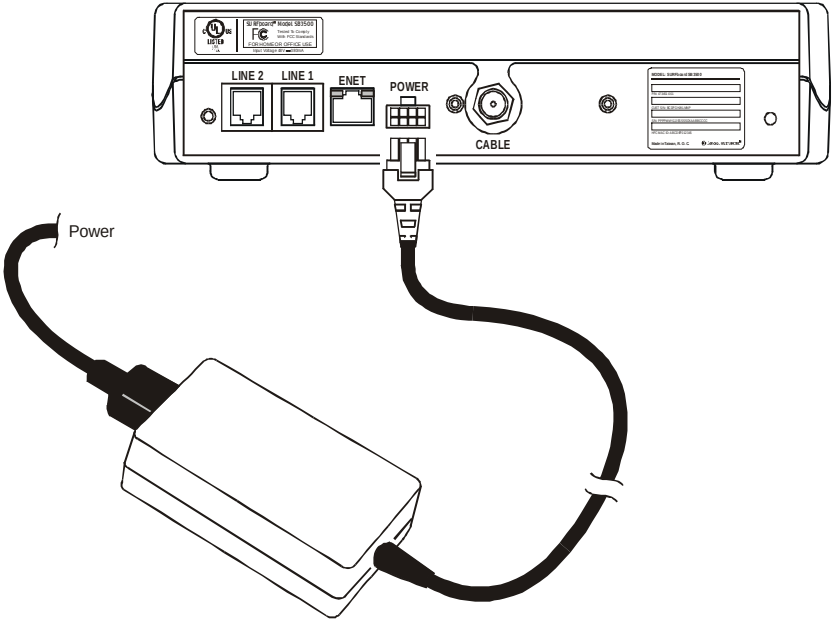
3 Connect your telephone to the SB3500 connector marked LINE 1. A separate phone line can be connected to the SB3500 connector marked LINE 2.

Each line connector on the SB3500 supports up to five telephones (one REN per telephone).

4 Connect the power brick or UPS cable to the SB3500 connector marked POWER as shown in the following sections.

Connecting the Power Supply

The SB3500 can be powered using either a power brick or a UPS. If you are using a power brick, connect the power brick to the SB3500 connector marked POWER.

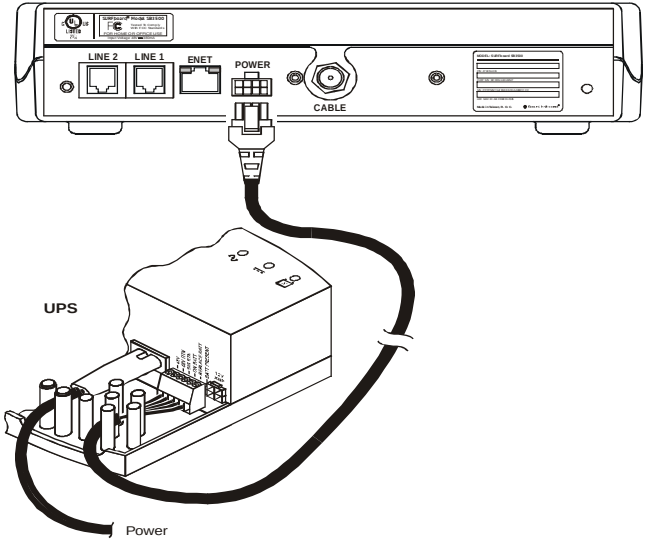


If the SB3500 uses an UPS, prepare the UPS according to the manufacturer's instructions. *You must use the cable provided with the SB3500 to connect the UPS to the SB3500. Do not substitute another cable.*

Do not connect the battery until you have connected the UPS to the SB3500.

1 Connect the UPS to the SB3500 connector marked POWER.

2 Connect the battery to the UPS per the manufacturer's instructions.



NOTE

To turn on your SB3500, simply plug it in. It is not necessary to unplug it when not in use.

Powering Up the First Time

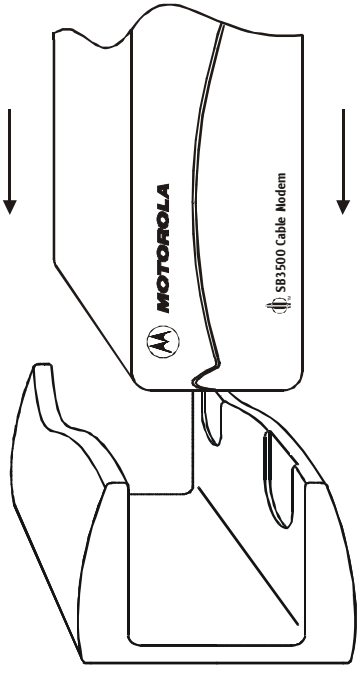
You must allow 5 to 30 minutes to power up the first time because the SB3500 must find and lock on the appropriate channels for communications.

1 Be sure that your computer is on and that the SB3500 is unplugged.

2 Plug in the AC power cord for the external UPS or power brick. Notice that the lights on the front panel cycle through this sequence:

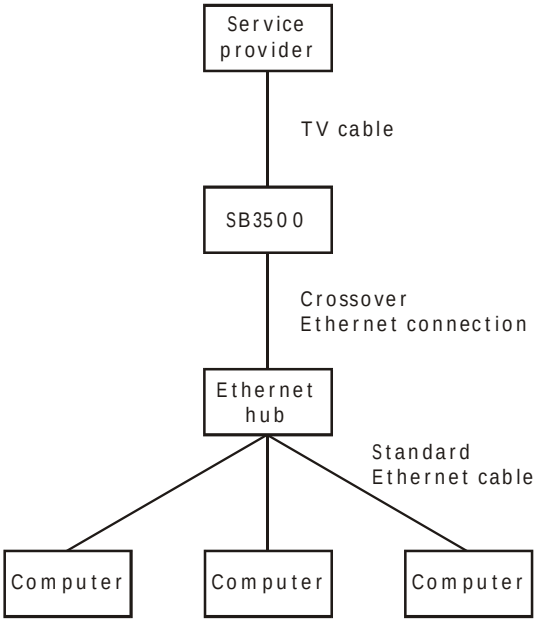
- Power flashes during a self-test. When the self-test is successfully complete, the light is solid green.
- Receive flashes while the SB3500 scans for the downstream channel. When the downstream channel is locked, the light is solid green.
- Send flashes while the SB3500 scans for the upstream channel. When the upstream channel is locked, the LED is solid green.
- Online flashes while the SB3500 is obtaining configuration information. When the configuration information is obtained, the LED is solid green.

During normal operation, the Power, Receive, Send, and Online lights are on and the Activity light flashes.



Using the Optional Cradle

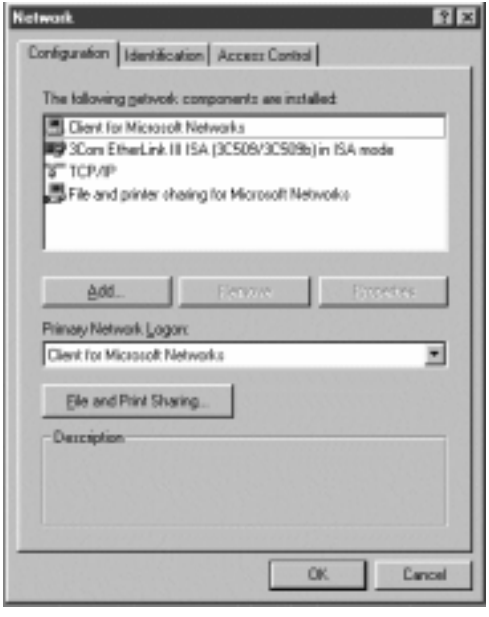
The SB3500 may come with an optional cradle that enables the modem to stand vertically on a flat surface, such as a desktop. To use the cradle, insert the modem into the cradle until the modem's feet fully engage with the grooves.



For Multiple Users

The SB3500 can easily serve as a gateway to the Internet for up to 32 users. The users must be on the same Local Area Network (LAN), and the SB3500 must be attached to the LAN and the cable system.

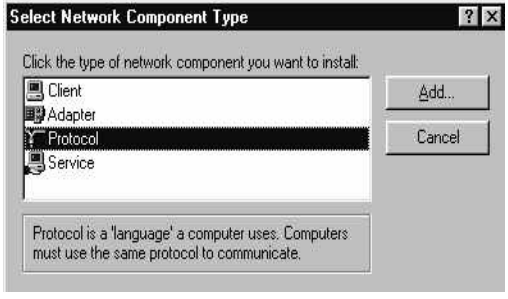
The network administrator at your service provider configures your modem for multiple users.

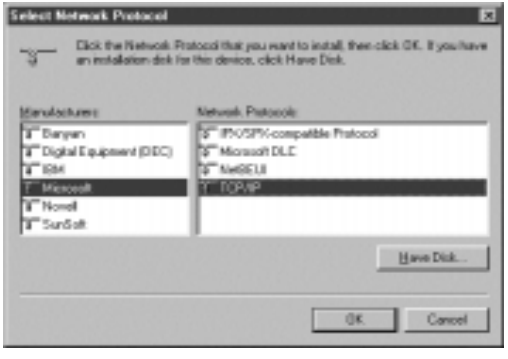


The SB3500 contains all necessary software. You don't need to configure the SB3500, but you must configure your computer for TCP/IP and check for an IP address. Your service provider may provide additional instructions for setting up your computer. The following basic instructions are for Windows™ 95 or Windows 98. If you are using a different operating system, refer to that user guide.

Configuring for TCP/IP

1. On the Windows Desktop, click Start.
2. Select Settings and then Control Panel from the pop-up menus.
3. Double-click the Network icon on the Control Panel window.
4. Select the Configuration tab on the Network window.
5. Check to see if TCP/IP has been installed for the Ethernet card. If TCP/IP appears in the list of network components, it is installed and you can proceed to step 10. If it doesn't appear on the list, continue with step 6.





6 Click Add.

7 Double-click the Protocol option on Select Network Component Type window.

8 Click Microsoft in the Manufacturers section and then click TCP/IP in the Network Protocol section of Select Network Protocol window.

9 Click OK.

10 Click TCP/IP on the Network window. If you have more than one TCP/IP entry, choose the one associated with the Ethernet card connected to the SB3500.

11 Click Properties.

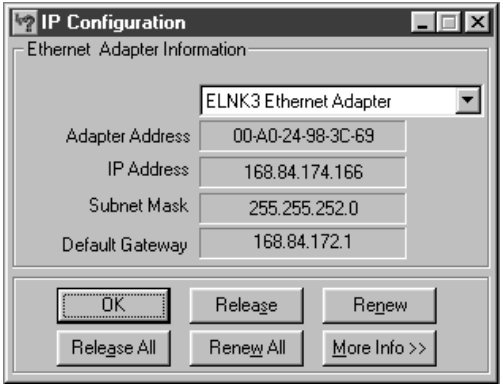
12 Select the IP Address tab on the TCP/IP window.

13 Click Obtain an IP address automatically.

14 Click OK to accept the TCP/IP settings.

15 Click OK to close the Network window.

16 Click OK when a prompt to restart your computer is displayed and then click OK again.



Verifying Your IP Address

The following basic instructions are for Windows 95 or Windows 98. If you are using a different operating system, refer to that user guide. To check the IP address:

1. On the Windows Desktop, click Start.
2. Select Run.
3. Type winipcfg.exe. A window similar to the example is displayed.
4. Select your adapter name.
5. Click Renew.
6. Click OK after the system displays an IP address.

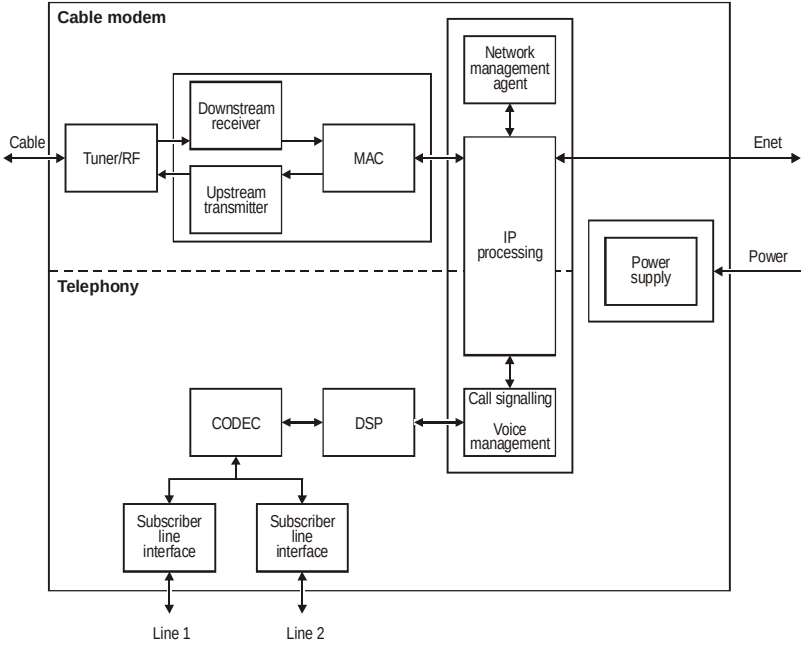
If after performing this procedure, your computer doesn't access the internet, call your service provider. They will assist in verifying your configuration.

TROUBLESHOOTING

This information is to help you quickly solve a problem. Before calling your service provider, try pressing the reset button. Resetting the SB3500 may take 5 to 30 minutes. Your service provider will need to know the status of the front-panel lights.

The problem	Possible Solution
Green POWER light is off	Check that the power cord is properly plugged into the wall outlet and to the rear panel of the SB3500. Call your service provider.
Cannot receive or send data	Check the lights on the front-panel. Note the first light from top to bottom that is off. This light indicates where the error occurred. If the first light that is off is: **Receive** During normal operation, the downstream channel is lost. During startup, the downstream channel is not acquired. **Send** During normal operation, the upstream channel is lost. During startup, the upstream channel is not acquired. **Online** During normal operations, the IP registration is lost. During startup, the IP registration was not successful. Check that your TV is working, that you have cable TV, and that you have a clear TV picture. If you aren't receiving your regular TV channels, your data service will not function. Check the coaxial cable at the rear panel and outlet and hand-tighten if necessary. Check the IP address (follow the steps on page 18); call your service provider if you need an IP address.

The SB3500 has two major functional blocks — cable modem and telephony — as illustrated in the following block diagram:



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